



UIC 3674

POPLAR FIELD - EPU 59-D WELL  
MURPHY OIL COMPANY

MT 25

ENFO 205A  
MT00025 (EPU 59-D SWD)

FY1992

CONCURRENCES WITH UIC PROGRAM PERMITTING ACTION

DESCRIPTION OF PROPOSED ACTION: Final permit Denial for Murphy Oil  
East Poplar Unit 59-D SWD Well

As PERMIT WRITER, I certify that this action has been taken in accordance with all UIC Program regulations and guidance in force at this time; and that the attached checklist describes the major actions completed. EXCEPT AS FOLLOWS: None

SIGNED: Cyrus McCampbell

DATE: 5-7-86

As DIRECT IMPLEMENTATION TEAM LEADER, I have reviewed this permit action to assure that the official file contains documentation indicative of a complete application and a thorough review. All checklists have been completed, the action is written in the format consistent with current guidance, and the content of the action is consistent with others of its type. EXCEPT AS FOLLOWS:

SIGNED: Nellie Elliott

DATE: 5/7/86

As REVIEWING ATTORNEY, I have reviewed the administrative record (official file) and find that the proposed action is within the authority of the Water Management Division Director, and that the proposed action is both legally sound and enforceable. EXCEPT AS FOLLOWS:

SIGNED: Nellie Elliott for MJS

DATE: 5/7/86

Under Contract 8RC  
As GROUND WATER SECTION CHIEF, I certify that this action is consistent with UIC Program policy; and that the appropriate accountability systems have been adjusted to reflect this proposed action. EXCEPT AS FOLLOWS:

SIGNED: Michael J. Strach

DATE: 5/9/86

As DRINKING WATER BRANCH CHIEF, I have reviewed the proposed action and find that it is consistent with UIC Program objectives. The exceptions noted above have been resolved, or do not create impediments. EXCEPT AS FOLLOWS:

SIGNED: Michael J. Strach

DATE: 5/12/86

As WATER MANAGEMENT DIVISION DIRECTOR, I have reviewed the findings of my staff and concur with them. I understand the exceptions noted by the Drinking Water Branch Chief, and am exercising my authority to approve this UIC Program permit action.

SIGNED: May H. Roden

DATE: 5/13/86

**FINAL PERMIT CONSIDERATIONS**

**A. THE FOLLOWING EVENTS HAVE TRANSPIRED SINCE THE DRAFT PERMIT WAS RELEASED:**

YES	NO	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Public notice published - Date: <u>3/27/86</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Copy of published notice received.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Affidavit of publication received.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Public comments received.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Applicant comments received.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Internal review comments received.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Response to public comments completed & summary prepared.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Public hearing held - Date: _____
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Final permit prepared.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Permit denial prepared.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Operator requested to Plug & Abandon existing well.

**B. AS A RESULT OF PUBLIC COMMENTS, THE FOLLOWING CHANGES HAVE BEEN MADE TO THE DRAFT PERMIT:**

NA

**C. AS A RESULT OF FURTHER REGIONAL & HQ REVIEW, THE FOLLOWING CHANGES HAVE BEEN MADE TO THE DRAFT PERMIT:**

NA

**D. AS A RESULT OF THE APPLICANT'S COMMENTS, THE FOLLOWING CHANGES HAVE BEEN MADE TO THE DRAFT PERMIT:**

NA

**E. AS A RESULT OF THE PUBLIC HEARING:**

NA



MAR 25 1986

## CONCURRENCES WITH UIC PROGRAM PERMITTING ACTION

REGULATORY OFFICE

DESCRIPTION OF PROPOSED ACTION: Draft Permit Denial for  
Murphy Oil UIC # MTS21PE-0025, East Poplar Unit

As PERMIT WRITER, I certify that this action has been taken in accordance with all UIC Program regulations and guidance in force at this time; and that the attached checklist describes the major actions completed. EXCEPT AS FOLLOWS: \_\_\_\_\_

SIGNED: \_\_\_\_\_

DATE: 3-13-86

As DIRECT IMPLEMENTATION TEAM LEADER, I have reviewed this permit action to assure that the official file contains documentation indicative of a complete application and a thorough review. All checklists have been completed, the action is written in the format consistent with current guidance, and the content of the action is consistent with others of its type. EXCEPT AS FOLLOWS: \_\_\_\_\_

SIGNED: \_\_\_\_\_

DATE: 3/13/86

As REVIEWING ATTORNEY, I have reviewed the administrative record (official file) and find that the proposed action is within the authority of the Water Management Division Director, and that the proposed action is both legally sound and enforceable. EXCEPT AS FOLLOWS: \_\_\_\_\_

SIGNED: \_\_\_\_\_

DATE: 3/17/86

As GROUND WATER SECTION CHIEF, I certify that this action is consistent with UIC Program policy; and that the appropriate accountability systems have been adjusted to reflect this proposed action. EXCEPT AS FOLLOWS: \_\_\_\_\_

SIGNED: \_\_\_\_\_

DATE: 3/17/86

As DRINKING WATER BRANCH CHIEF, I have reviewed the proposed action and find that it is consistent with UIC Program objectives. The exceptions noted above have been resolved, or do not create impediments. EXCEPT AS FOLLOWS: \_\_\_\_\_

SIGNED: \_\_\_\_\_

DATE: 3/18/86

As WATER MANAGEMENT DIVISION DIRECTOR, I have reviewed the findings of my staff and concur with them. I understand the exceptions noted by the Drinking Water Branch Chief, and am exercising my authority to approve this UIC Program permit action. \_\_\_\_\_

SIGNED: \_\_\_\_\_

DATE: 3/18/86

# DRAFT PERMIT - MAJOR CONSIDERATIONS

## A. THE FOLLOWING ITEMS HAVE BEEN CONSIDERED IN PREPARING THIS ACTION:

YES NO

- ☒ 1. A complete application was submitted. (See E. below)
- ☒ 2. All USDW's will be protected.
- ☒ 3. Wells within the Area of Review have been reviewed and corrective action:

☐ is not necessary, ☐ is a permit condition.

- ☒ 4. Plugging and Abandonment Plan is appropriate.
- ☒ 5. Well construction details comply with 40 CFR 146.
- ☒ 6. Operating data is consistent with geological conditions.
- ☒ 7. Mechanical Integrity of the well(s):

☒ has been demonstrated, failed 9/27/86

☐ will be demonstrated before injection will be allowed.

- ☒ 8. Monitoring & Reporting are adequate for compliance purposes.
- ☒ 9. Adequate Financial Responsibility has been demonstrated by:

☐ Bond ☐ Letter/Credit ☐ Trust ☐ Financial Data

- ☒ 10. An Aquifer Exemption is:

☒ not needed, ☐ already in existence, ☐ included.

- ☒ 11. Special Conditions: Plugging of the Well within 60 days - Well has not operated since 6/24/84

## B.1. THE FOLLOWING INFORMATION WAS CONTAINED IN THE PERMIT APPLICATION: (Except as noted, all information is required for all classes of wells.)

### ATTACHMENTS

- ☐ All information requested on Form 4.
- ☒ Signature of VF or authorized representative.
- ☒ Notification of Land Owners
- ☒ Area of Review Methods
- (NA Exist II's) ☐ Topographic Maps
- (NA Exist II's) ☐ Corrective Action Plan
- (NA Class II's) ☐ Maps and I-Sections of USDW's
- (Class II only) ☒ Name and Depth of USDW's

Continued next page

(NA Class II's)	<input type="checkbox"/> Maps and X-Sections of Geologic Structure of Area	F
(Class II only)	<input checked="" type="checkbox"/> Geological Data on the injection & confining zone	G
	<input checked="" type="checkbox"/> Operating Data	H
(NA Exist II's)	<input type="checkbox"/> Formation Testing Plan	I
(Class II Opt)	<input checked="" type="checkbox"/> Stimulation Program	J
(Class II Opt)	<input type="checkbox"/> Injection Procedures	K
	<input checked="" type="checkbox"/> Construction Procedures & Details	L & M
(III's only)	<input type="checkbox"/> Changes in injected fluid	N
(Class II Opt)	<input type="checkbox"/> Plan for Well Failure	O
(Class II Opt)	<input type="checkbox"/> Monitoring program	P
	<input checked="" type="checkbox"/> F & R Plan	Q
	<input type="checkbox"/> Financial Responsibility demonstration	R
(as needed)	<input type="checkbox"/> Request for Aquifer Exception	S
(as applicable)	<input type="checkbox"/> List of Existing EPA Permits	T
	<input checked="" type="checkbox"/> Description of Business	U
	<input type="checkbox"/> Other: (List significant items)	

E.2. AFTER REVIEW, THE FOLLOWING ADDITIONAL ITEMS WERE REQUESTED IN ORDER TO COMPLETE THE APPLICATION:

U.S. ENVIRONMENTAL PROTECTION AGENCY  
UNDERGROUND INJECTION CONTROL PROGRAM

DENIAL OF AUTHORIZATION TO INJECT

Pursuant to the Underground Injection Control Regulations of the U.S. Environmental Protection Agency codified at Title 40 of the Code of Federal Regulations, Parts 124, 144, 146, and 147,

Murphy Oil, USA, Incorporated  
200 Peach Street  
El Dorado, Arkansas 71730

is hereby denied authorization to operate the Class II injection well, commonly known as EPU 59-D located in the NW 1/4, SW 1/4, 1911 feet from north line and 732 feet from west line of Section 4, Township 28 North and Range 51 East in Roosevelt County, Montana.


This document serves as a denial of authorization to continue injection activities and serves as a notice to plug and abandon the EPU 59-D well. The operator shall adhere to the following conditions:

- 1) The injection activities shall cease upon the effective date of this denial.
- 2) The Director shall be notified fourteen (14) days prior to the plugging and abandonment of this well.
- 3) The well shall be plugged and abandoned within sixty (60) days of the effective date of this denial and in accordance with the attached EPA-approved Plugging and Abandonment Plan submitted by the applicant.
- 4) Within sixty (60) days after plugging the well, the permittee shall submit a report on Form 7520-13 to the Director. The report shall be certified as accurate by the person who performed the plugging operation and the report shall consist of either: (1) a statement that the well was plugged in accordance with the plan, or (2) where actual plugging differed from the plan, a statement that specifies the different procedures followed. The Director may require additional work if it is determined that the modified plan or work performed, is not adequate to protect all USDW's.
- 5) Murphy Oil shall verify the cement top of the set plugs, using an appropriate method of cement tagging.

This denial consists of a total of 4 pages. Further, it is based upon representations made by the applicant and on other information contained in the Administrative Record.

Issued this 13th day of May, 1986.

This action shall become effective May 13th, 1986.

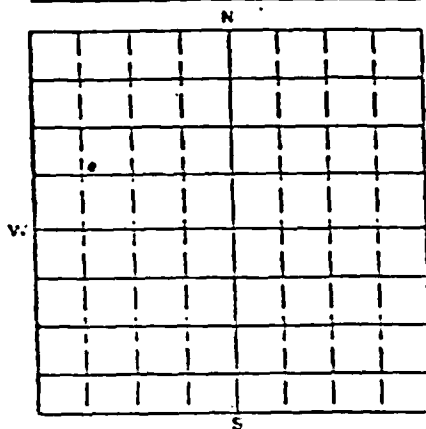
  
Max H. Dodson, Director  
Water Management Division

NAME AND ADDRESS OF FACILITY

Murphy Oil USA, Inc.  
Poplar, Montana

EPU 59-D

NAME AND ADDRESS OF OPERATOR

Murphy Oil USA, Inc.  
200 Peach St., El Dorado, AR 71730LOCATE WELL AND OUTLINE UNIT ON  
SECTION PLAT — 640 ACRES

STATE

COUNTY

PERMIT NUMBER

MT

Roosevelt

SURFACE LOCATION DESCRIPTION

NE 1/4 OF SW 1/4 OF NW 1/4 SECTION 4 TOWNSHIP 28N RANGE 36E

LOCATE WELL IN TWO DIRECTIONS FROM NEAREST LINES OF QUARTER SECTION AND DRILLING UNIT

Surface Location: 1911 ft. from (N/S) N Line of quarter section  
and 732 ft. from (E/W) W Line of quarter section

TYPE OF AUTHORIZATION

- ☒ Individual Permit  
☐ Area Permit  
☐ Rule

Number of Wells 1

WELL ACTIVITY

- ☐ CLASS I  
☒ CLASS II  
☐ Brine Disposal  
☐ Enhanced Recovery  
☐ Hydrocarbon Storage  
☐ CLASS III

Lease Name EPU

Well Number 59-D

## CASING AND TUBING RECORD AFTER PLUGGING

SIZE	W.T. (LB/FT)	TO BE PUT IN WELL (FT)	TO BE LEFT IN WELL (FT)	HOLE SIZE
13 3/8 48#			139.85	17 1/2
9 5/8 36#			942.83	12 1/2
5 1/2 15.5 #			5735.36	8 3/4

## METHOD OF EMPLACEMENT OF CEMENT PLUGS

- ☒ The Balance Method  
☒ The Dump Bailer Method  
☐ The Two-Plug Method  
☐ Other

## CEMENTING TO PLUG AND ABANDON DATA

	PLUG #1	PLUG #2	PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG #7
Size of Hole or Pipe in which Plug Will Be Placed (inches)	5 1/2	5 1/2	5 7/8				
Depth to Bottom of Tubing or Drill Pipe (ft.)	3214						
Sacks of Cement To Be Used (each plug)	2	10	10				
Slurry Volume To Be Pumped (cu. ft.)	2	10	10				
Calculated Top of Plug (ft.)	3199	10	20				
Measured Top of Plug (if tagged ft.)							
Slurry Wt. (Lb./Gall)							
Type Cement or Other Material (Class III)							

## LIST ALL OPEN HOLE AND/OR PERFORATED INTERVALS AND INTERVALS WHERE CASING WILL BE VARIED (If any)

From	To	From	To
3337	3365		
4300	3330		
3264	3276		

Estimated Cost to Plug Wells \$ 6,000  
 \*Cast iron B.P. will be set at 3214' with 2 sacks of cement on top.  
 \*\*10 sacks cement will be pumped down 5 1/2" csg annulus. Casing will be cut off 6' below ground and a plate welded on top.

## CERTIFICATION

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

NAME AND OFFICIAL TITLE (Please type or print)

DAVID M. FEDDERSON

SIGNATURE

DATE SIGNED

11/14/88

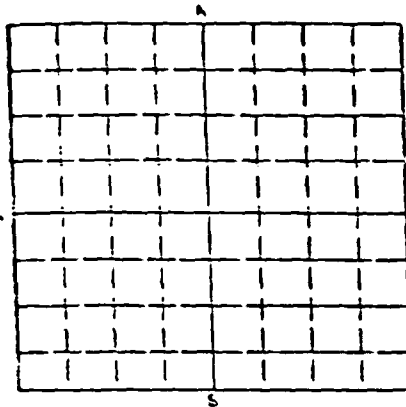




## PLUGGING RECORD

NAME AND ADDRESS OF PERMITTEE

NAME AND ADDRESS OF CEMENTING COMPANY

LOCATE WELL AND OUTLINE UNIT ON  
SECTION PLAT — 360 ACRES

STATE

COUNTY

PERMIT NUMBER

SURFACE LOCATION DESCRIPTION

W. OF

W. OF

W. SECTION

TOWNSHIP

RANGE

LOCATE WELL IN TWO DIRECTIONS FROM NEAREST LINES OF QUARTER SECTION AND DRILLING UNIT

Surface

Location \_\_\_\_\_ ft. from (N/S) \_\_\_\_\_ line of quarter section

and \_\_\_\_\_ ft. from (E/W) \_\_\_\_\_ line of quarter section

TYPE OF PERMIT

- ☐
- Individual
- 
- ☐
- Area

Number of Wells

Describe in detail the manner in which the fluid was placed and the method used in introducing it into the hole

## CASING AND TUBING RECORD AFTER PLUGGING

## WELL ACTIVITY

METHOD OF EMPLACEMENT OF  
CEMENT PLUGS

SIZE

WELL (in)

PUT IN WELL (in)

LEFT IN WELL (in)

HOLE SIZE

☐ Brine Disposal☐ Enhanced Recovery☐ Hydrocarbon Storage☐ The Balance Method☐ The Dump Baller Method☐ The Two-Plug Method

Lease Name

Well Number

## CEMENTING TO PLUG AND ABANDON DATA

PLUG #1

PLUG #2

PLUG #3

PLUG #4

PLUG #5

PLUG #6

PLUG #7

Cementing Date

Size of Hole or Pipe in which Plug Placed (inches)

Depth to Bottom of Tubing or Drill Pipe (ft.)

Secks of Cement Used (each plug)

Slurry Volume Pumped (cu ft.)

Calculated Top of Plug (ft.)

Measured Top of Plug (if tagged ft.)

Slurry Vol. (lb./Gals.)

Type Cement

## LIST ALL OPEN HOLE AND /OR PERFORATED INTERVALS

From

To

From

To

Signature of Cementer or Authorized Representative

Signature of EPA Representative

## CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. (Ref. 40 CFR 122.22)

NAME AND OFFICIAL TITLE (Please type or print)

SIGNATURE

DATE SIGNED

Statement of Basis

Murphy Oil, USA, Incorporated

EPU 59-D well  
Roosevelt County, Montana

EPA # MTS21PE-0025  
Date Prepared: February 27, 1986

Contacts:

Environmental Protection Agency	Environmental Protection Agency
Region VIII	Montana Office
Ground Water Section	Federal Office Building
Attn: Angus M. Campbell	Drawer 10096
One Denver Place, Suite 1300	301 South Park
999 18th Street	Helena, Montana 59626
Denver, Colorado 80202-2413	
Telephone (303) 293-1420	

Description of Facility and Background File

On August 28, 1984, Murphy Oil, USA, Inc. of El Dorado, Arkansas, made application for an Underground Injection Control (UIC) permit to inject brine produced in conjunction with oil from Mississippian age formations into the Dakota Formation (Fm.). The rule-authorized well covered by the application is in the East Poplar Unit, located in the NW 1/4, SW 1/4, further described as 1911 feet from north line and 732 feet from west line of Section 4, T28N, R51E in Roosevelt County, Montana.

The well was drilled to a total depth of 5741 feet, cased with 13 & 3/8 inch casing to 145 feet and cemented to the surface. A 9 & 5/8 inch casing was set at 948 feet with 400 sacks of cement. A 5 & 1/2 inch casing was run to 5741 feet and cemented with 300 sacks of cement. The hole was blocked squeezed with 450 sacks of cement at 3149 and 3400 feet. A 2 & 7/8 inch tubing was run with a packer to 3160 feet.

The operator has not used this well since the promulgation of the UIC program in Montana. On September 27, 1985, this well was tested for mechanical integrity by an EPA representative; the well failed the test due to either a hole in the casing or wellhead. The operator, in a letter to Bill Engle of the EPA Montana Office, dated October 1, 1985, stated that Murphy Oil was planning to plug and abandon this well in the future; therefore, Murphy Oil was not going to perform any work-over on this well.

Murphy has submitted a Plugging Plan for this well and EPA has approved the tentative plan which has been incorporated into the denial as page four. The only USDW's in the area of this well are the alluvial aquifers and these shall be protected by the surface casing which is cemented to the surface.

Denial of the permit application is based upon the fact that the operator wishes to plug this well and that there has been no permit issued for this application. It is internal policy of EPA Region VIII, that when a well is called in there may be no permit application withdrawal by the applicant. The Agency must either issue, deny or transfer the permit application.

Within sixty (60) days after the denial becomes effective, Murphy Oil shall have plugged and abandoned the EPU 59-D well, in accordance to the submitted EPA-approved Plugging and Abandonment Plan.

The Plan includes the setting of three plugs as follows:

- |             |   |
|-------------|---|
| Plug No. 1: | Two sack plug placed on a Cast Iron Bridge Plug set at 3214 feet.   |
| Plug No. 2: | Ten (10) sacks of cement in the 5½ inch casing, with the top of cement at 10 feet.                                    |
| Plug No 3:  | Ten (10) sack plug set in the 9½ and 5½ annular space with the top of plug estimated to be 20 feet below the surface. |

Murphy Oil shall verify the cement top of plugs using an appropriate method of cement tagging. The remainder of the open space of the well will be filled with a mud gel of sufficient weight and density.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION VIII  
ONE DENVER PLACE — 999 18TH STREET — SUITE 1300  
DENVER, COLORADO 80202-2413

PUBLIC NOTICE  
INTENT TO DENY AN UNDERGROUND  
INJECTION CONTROL PERMIT  
TO  
MURPHY OIL, USA, INCORPORATED

PURPOSE OF PUBLIC NOTICE

The purpose of this notice is to solicit public comment on the proposal by the Region VIII Office of the U.S. Environmental Protection Agency (EPA) to deny an underground injection control (UIC) permit to inject fluids via a Class II salt water disposal well.

BACKGROUND

EPA Region VIII has reviewed an application for an Underground Injection Control Permit from Murphy Oil, USA, Incorporated, 200 Peach Street, El Dorado, Arkansas, 71730, regarding produced-water disposal operations. The injection fluid is salt water produced in conjunction with the extraction of oil from Mississippian age formations. The well in question was put into operation on July 16, 1955, and has been authorized by rule, under EPA regulations, since June 25, 1984. The well is located in the East Poplar Unit NW 1/4, SW 1/4, of Section 4, T28N, R51E, and is commonly known as EPU 59-D salt water disposal well.

EPA requested Murphy Oil to apply for a permit for the EPU 59-D well, in accordance with the Agency's schedule to permit existing salt water disposal wells. Murphy Oil made a request to withdraw the permit application because they wished to plug and abandon this well. However, this request was denied, since the Agency can only issue, deny or transfer the permit application for an existing well.

EPA has made a preliminary determination to deny the permit application, and is hereby serving notice of intent to deny Murphy Oil, USA, Incorporated, authorization to continue underground injection activities.

This decision is based upon the fact that this well has not been operating since June 1984, and that the operator wishes to plug and abandon this well.

## PUBLIC COMMENTS

All data submitted by the applicant, as well as the permit-denial document prepared by EPA, are contained in the Administrative Record for Murphy Oil. This information is available for public inspection at these locations from 9:00 AM to 5:00 PM, or by contacting one of the following offices:

Environmental Protection Agency  
Region VIII  
Ground Water Section  
Attn: Angus M. Campbell  
One Denver Place, Suite 1300  
999 18th Street  
Denver, Colorado 80202-2413  
Telephone (303) 293-1420

Environmental Protection Agency  
Montana Office  
Federal Office Building  
Drawer 10096  
301 South Park  
Helena, Montana 59626

Public comments are encouraged and will be accepted, in writing, at the Denver Office for a period of thirty (30) days after publication of this notice. A request for a public hearing should be made in writing and should state the nature of the issues proposed to be raised at the hearing. A PUBLIC HEARING WILL BE HELD ONLY IF SIGNIFICANT INTEREST IS SHOWN.

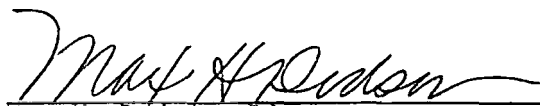
## FINAL DECISION AND APPEAL PROCESS

After the close of the public comment period, EPA will issue a final decision, and will notify all commenters regarding this decision. The final decision may be to: issue the denial, modify or revoke and reissue the draft action. The final decision shall become effective thirty (30) days after the final decision is issued, unless no substantial changes were made from the draft permit denial to the final permit denial, in which case the action shall become effective immediately upon issuance.

Within thirty (30) days after a final decision has been issued, any person who filed comments on the draft action or participated in a public hearing, may petition the Administrator to review the action. Commenters are referred to 40 CFR Sections 124.15 through 124.20 for procedural requirements of the appeal process.

MAR 27 1988

Date of Publication



Max H. Dodson, Director  
Water Management Division



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION VIII  
ONE DENVER PLACE — 999 18TH STREET — SUITE 1300  
DENVER, COLORADO 80202-2413

MAY 13 1986

Ref: 8WM-DW

CERTIFIED MAIL  
RETURN RECEIPT REQUESTED

Mr. Alvin W. Simpson  
Manager of Operations  
Murphy Oil, USA, Incorporated  
200 Peach Street  
El Dorado, Arkansas 71730

Re: Underground Injection Control (UIC)  
Final Permit Denial for  
EPU 59-D SWD Well  
Permit Application No. MTS21PE-0025

Dear Mr. Simpson:

Enclosed is the final permit denial for the EPU 59-D SWD well, referenced above. This well is located in the East Poplar Field, Roosevelt County, Montana.

The public comment period closed on April 27, 1986. There were no comments made during the public comment period on the draft action; therefore, no substantial modifications were made and the permit denial will become effective immediately.

Murphy Oil will have 60 days from the effective date to plug and abandon this well in accordance with conditions set within the permit denial.

If you have any questions please refer them to Angus M. Campbell at (303) 293-1420 or you may write to him at the above address.

Sincerely,

A handwritten signature in cursive script, appearing to read "Max Dodson".

Max Dodson, Director  
Water Management Division

Enclosure





UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION VIII  
ONE DENVER PLACE — 999 18TH STREET — SUITE 1300  
DENVER, COLORADO 80202-2413

MAR 19

REF: 8WM-DW

CERTIFIED MAIL  
RETURN RECEIPT REQUESTED

Mr. Alvin W. Simpson  
Manager of Operations  
Murphy Oil, USA, Incorporated  
200 Peach Street  
El Dorado, Arkansas 71730

RE: Underground Injection Control (UIC)  
Intent to Deny a Permit for  
EPU 59-D Salt Water Disposal Well  
Permit Application No. MTS21PE-0025  
Roosevelt County, Montana

Dear Mr. Simpson:

Enclosed is a draft permit denial for the EPU 59-D salt water disposal injection well, in Roosevelt County, Montana. A Statement of Basis, which discusses rationale for denial, is also enclosed.

A notice should appear soon in the Billings Gazette and the Wolf Point Herald notifying the public of their opportunity to comment. A notice of our intent to deny this permit has been sent to all surface landowners who may be affected by the proposed action.

The public comment period for this action will run for thirty days from the date of publication. You may call Ms. Edna Walton at (303) 293-1421 to obtain the exact deadline for all public comments.

Please be aware that a final decision will not be made until after the public comment period closes. This draft permit denial does not constitute a final decision, and therefore, you may continue to operate the well under authorization by rule until a final decision is made. Before a final decision will be made, all public comments will be taken under consideration. If any substantial comments are received or if any substantial changes are made from the draft denial to the final denial, it will be necessary to delay the effective date of the final action for an additional thirty (30) days. This delay is required by Section 124.15 (b) in order to allow for potential appeal of the final decision.

Please note that this is also your opportunity to carefully inspect these documents and be sure that you are aware of all of the conditions stated therein.

If you have any questions on this action, please direct them to Angus M. Campbell at (303) 293-1420.

Sincerely,

A handwritten signature in dark ink, appearing to read "Max H. Dodson", followed by a horizontal line extending to the right.

Max H. Dodson, Director  
Water Management Division

Enclosures:    Draft Permit Denial  
                  Statement of Basis  
                  Public Notice

MAY 09 1985

REF: 8WM-DW

Mr. Alvin W. Simpson  
Manager of Operations  
Murphy Oil, USA, Incorporated  
200 Peach Street  
El Dorado, Arkansas 71730

ENVIRONMENTAL PROTECTION  
AGENCY

MAY 13 1985

MONTANA OFFICE

RE: Underground Injection Control (UIC)  
Permit Applications for East Poplar Field  
Well No: 80-D (MTS21PE-0026)  
29-D (MTS21PE-0024)  
59-D (MTS21PE-0025)

Dear Mr. Simpson:

The applications for wells numbered 80-D and 29-D have been judged complete. However, the 80-D is the only well for which we are able to proceed with permitting at this time. The permitting process includes:

- a) Preparation of a Draft Permit;
- b) Preparation of Statement of Basis or Fact Sheet;
- c) Public Notice of Intent to Issue/Deny Permit;
- d) Conduct Public Hearing, if requested, to Receive and Evaluate Comments;
- e) Issue/Deny Permit.

We are delaying permit action for the East Poplar Field (EPU) Well No. 29-D, until after the May 29, 1985 public hearing, since injection is into the Judith River Formation. The public hearing will provide EPA the necessary information to determine whether injection into the Judith River Formation will be allowed to continue.

The permit application for the EPU 59-D well is not complete in that bonding was not obtained for the facility. Since this facility may be affected by the outcome of the public hearing, EPA has decided that action on this facility can wait until a determination on the Judith River Formation has been made. It is EPA policy, that the withdrawal of a permit application is not allowed after a solicited permit application has been submitted for an existing injection well. This well will either have to be properly plugged and abandoned or worked-over and completed as an operating well.

-2-

If you have questions pertaining to the permitting process or the permit status of any of the above mentioned wells, contact me at (303) 293-1420.

Sincerely,

Angus M. Campbell  
Geologist

cc: Bill Engle, EPA  
Montana Operations Office

LIUZZI/campbell 5/6/85 3017Pcopied from 2972P  
corrected/1st final print 05/07/85/craig

FEB 26 1985

REF: 841-04

CERTIFIED MAIL  
RETURN RECEIPT REQUESTED

Mr. Alvin W. Simpson  
Manager of Operations  
Murphy Oil, U.S.A., Inc.  
200 Peach Street  
El Dorado, Arkansas 71730

RE: Oil Permit Applications:  
wells - EPL 1-L, 5-L, 8-L, 24-L,  
55-L and 26-L  
East Poplar Field, Montana

Dear Mr. Simpson:

Your referenced permit applications contain numerous deficiencies, which to date, have not been adequately addressed. It is imperative that they be corrected and completed within fourteen (14) calendar days from the receipt of this letter, as we find no reason to allow further extensions of time. In essence, if the deficiencies are not corrected in the fourteen day period, your authorization to inject under 40 CFR 144.21 automatically expires, and any further injection into any of these wells will be unlawful. Thereafter, injection activities will only be allowed if: 1) complete applications are received, and 2) the wells are permitted.

Once an application is complete, processing time generally ranges from 50 to 70 days. Penalties for unauthorized injection are prescribed by the Safe Drinking Water Act (SDWA, P.L. 93-523, as amended) in Section 1423. In summary, they are: (a) civil penalties of up to \$2,500.00 per day per well, or, (b) in lieu of civil penalties, criminal penalties of up to \$10,000.00 per day per well. The importance of completing these applications should be obvious.

Attached are explanations of the remaining deficiencies. Those shown in Attachment I are common to each application. Those in Attachment II and III are specific for individual wells. If you have any questions or are uncertain about what is required, you should call the permit writer named on the well-specific list of deficiencies.

If it would be of help, you can arrange a meeting in our office by contacting the permit writers. Their phone numbers are included in the lists of deficiencies.

Sincerely,

ORIGINAL SIGNED BY

MAX H. DODSON

Max H. Dodson, Director  
Water Management Division

L10221/craig/02/05/85/0904P/page 1/draft  
editing/02/06/85/campbell  
editing/corrections/1st final print 02/06/85/craig  
editing/2nd draft print/02/12/84/craig  
editing/3rd draft print/02/12/85/campbell  
editing/2nd final print/02/20/85/craig  
editing/4rd draft print/02/22/85/campbell  
editing/5th draft print/02/22/85/ehlert  
editing/3rd final print/02/22/85/ehlert



### Attachment I

#### COMMON DEFICIENCIES FOR ALL WELLS:

The common deficiencies for wells EPU 1-D, EPU 5-D, EPU 8-D, EPU 29-D, EPU 59-D and EPU 80-D are as follows:

- 1) Submittal of the names and addresses to whom the area of notification was sent.
- 2) Submittal of the best available topographical map which depicts surface water and location of the wells. (\* Attachment A)
- 3) Identification of the fluid used as a corrosion inhibitor. (Attachment H)
- 4) Submittal of the Cement bond Logs for all wells.
- 5) Submittal of information of the existence of other EPA permits, if any. (Attachment T)
- 6) The estimated plugging and abandonment costs seem insufficient, as compared to other permits for similar types of wells. This estimated cost is the cost of plugging the well if EPA has to do the job. An itemized cost of plugging should be provided which includes contracting services (not in-house expenses) and no salvaging credits. (Attachment Q)
- 7) Financial Responsibility Demonstration. EPA is requiring a letter of credit as the financial instrument.

\*/ Attachment refers to the required Attachments listed on Form 4, EPA Permit Application.

ATTACHMENT II

SPECIFIC DEFICIENCIES FOR WELLS: EPU 1-D, 5-D, 8-D  
Permit Writer: Michael Liuzzi 303-293-1414

The specific deficiencies for each well are listed below under the heading identifying each well.

1) EPU 1-D

A. What is the depth to the Judith River formation? In addition, there appears to be another water bearing formation indicated on well logs on file at EPA. The formation is at an approximate depth of 1100 feet. What is the name of the formation and what is water quality in this formation?

B. Clarify the discrepancy between the indicated average injection volume and the result of multiplying the average injection rate and the average hours of operation. See Attachment H.

C. There is an inconsistency between the initial submittal and the December submittal relating to the status of EPU #78. The August submittal indicated that EPU #78 was "plugged and abandoned". The December submittal indicates that EPU #78 is "Temporarily Abandoned." Which is correct? If EPU #78 is temporarily abandoned, how is the well being maintained during the period of temporary abandonment?

D. Note discrepancy on the plugging and abandonment form. The total depth indicated for the 5 1/2" casing is 3084 feet. Placing the cast iron bridge plug at 3100 feet does not have the cement or plug in the 5 1/2" casing but in the 7" casing. The calculated top of plug is in error and needs to be corrected. A minimum of 50 feet of cement is recommended for plugs, therefore, additional cement is required. Also, the information requested for plug #2's location is still needed. (See Attachment Q).

E. Refer to the Brine Disposal Form 520-10 and respond to the question in the October 30th letter on page 4 for EPU 1-D. Why is the hole depth for 165 feet of casing given as 375 feet? In like fashion provide a similar explanation for the remaining casing sizes of 9 5/8", 7" and 5".

2) EPU 5-D

A. Refer to page 4 of the October 30th letter. The information requested under EPU 5-D, (1) has not been supplied. What is the depth to the unknown tertiary sand?

B. What is the status of well 107's condition? Well 107 is within the area of review. When was the last mechanical integrity test performed on this well? Supply an interpretation of the cement bond log for well 107.

C. In Attachment H, "Average Injection Volume" does not compute with the multiplication of average injection rate and the average hours per day of operation. Verify these results.

D. In Attachment M, there is a typo, "38#" should read "48#".

E. On the plugging and abandonment form, note that the type of cement has not been indicated. Supply this information. Also explain the method of placing Plug #2 within 10 feet of the surface with only 10 sacks of cement. No mention is made of a bridge plug being placed. The "Method of Emplacement of Cement Plugs" is incomplete. I have assumed that, because EPU 1-D and 8-D will use the dump bailer method, the plug for EPU 5-U will be placed by the same method. If you disagree, please complete the form and resubmit it to EPA. A minimum of 50 feet of cement is recommended for plugs, therefore additional cement is required.

3. EPU 8-D

A. On Form 4, Item XI is incomplete. I used EPU 1-D and 5-D as examples to fill in the following letters in the allotted space. "A, E, G, H, M, Q, R to U."

B. There are inconsistencies between Attachment G and 2 copies of "Sundry Notices and Reports on Wells" dated July 26, 1978 and July 21, 1978. Note that attachment G has the Judith River beginning at 750 feet and ending at 950 feet. Sundry notices have the Judith River at 990-991.

C. In Attachment H, are the wells numbered 19 and 4-G the same well? Where are Salt Water Stations No. 1, No. 3, and No. 4 located? Locate these stations on each of the maps for the injection wells. More recent water analysis are required for each well submitted. Well 4-G's water analysis was performed in 1954. The remaining wells had a water analysis performed in 1975 or 1976.

D. In Attachment Q, the type of cement still has not been indicated under "Cementing to Plug and Abandon Data." Plug #2 and #3 remain unexplained. How are the 10 sacks placed in the the well in order to be 10 feet below the surface. Explain the need for Plug #3.

ATTACHMENT III

SPECIFIC DEFICIENCIES FOR WELLS: EPU 29-D, EPU 59-D, EPU 80-D  
Permit writer Angus M. Campbell (303) 293-1420

The specific deficiencies for each well above are listed below under the heading identifying each well

EPU 29-D

The workover reports for plugging back the well and squeezing off old perforations needs to be submitted. Identify the procedure of the workover including: how the cement was set and how much cement was used; where the hardware was set to hold the cement, what type of hardware was used; how much casing was removed; the plugging of the old hole and the dates when this all was complete. Verification that the plugs are still in place is necessary.

EPU 59-D

The well is currently temporarily shut-in. How long has this well been shut-in? This needs to be identified in operating information.

The Judith River is a USDM in that it falls within the 3,000 to 10,000 ppm TDS category. Please submit the top of the formation and its thickness.

Please give the location of Bud Lien's water well.

EPU 80-D

Location on EPA Form 7520-10 shows well located NE 1/4 of SW 1/4 and 1982 FNL and 761 FWL. The written footage location make the well located in the NE 1/4 of the SW 1/4 of the NW 1/4 Section 3 T28N R51E, please give the correct location.

The workover reports shows "see attached"; these reports were not attached. They need to be supplied.

The Judith River Fm. was not identified as it should have been as a USDM in the 3,000 to 10,000 ppm TDS category.

Please give the location of the Warren Corne Water Well.

CAMPBELL/craig/02/04/85/0904P/pages 1-4/draft  
editing/02/06/85/campbell  
editing/corrections/1st final print 02/06/85/craig  
editing/2nd draft print/02/11/85/craig  
editing/3rd draft print/02/12/85/campbell  
editing/2nd final print/02/20/85/craig



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION VIII  
1860 LINCOLN STREET  
DENVER, COLORADO 80295-0699

Ref: 8WM-DW

OCT 3 1984

Mr. Alvin W. Simpson  
Manager of Operations  
Murphy Oil USA Incorporated  
200 Peach Street  
El Dorado, Arkansas 71730

Re: Underground Injection Control (UIC)  
Permit Application for: East Poplar  
Field wells no.'s 1-D, 5-D, 8-D,  
29-D, 59-D 80-D  
EPA ID #'s: MTS21PE-0021, (5-D),  
MTS21PE-0022 (1-D), MTS21PE-0023 (8-D)  
MTS21PE-0024 (29-D), MTS21PE-0025 (59-D)  
MTS21PE-0026 (80-D)

Dear Mr. Simpson:

On August 29, 1984, my UIC permit staff received your applications for salt water disposal into the above referenced wells. All of these wells are located on Indian lands in the East Poplar Unit near Poplar, Montana. For this reason, both EPA and the Bureau of Land Management (BLM) have permitting, inspection, and plugging requirements for Class II wells in Montana. Therefore, once these wells are permitted, each permit will have a notice attached that informs you that an EPA approval does not constitute BLM approval for subsurface injection.

Review of your applications has made apparent a number of deficiencies and/or missing parts. The applications cannot be declared complete nor the permit processing continued until the below listed information is supplied. Please note that certain deficiencies are common to all applications and listed under "Common Deficiencies". Deficiencies that are specific to an individual application are listed under "Individual Well Application Deficiencies" by well number.

COMMON DEFICIENCIES

1. PERMIT FORM 4 UIC: Please note the following:

Item V: SIC Codes - the appropriate Standard Industrial Classification (SIC) code for your operations are 1311. We have added it to your application forms. Add other appropriate SIC codes for each well on the application forms.

Item XI: Attachments - the listing of the attachments is missing.

Item XII C: The person who signs the permit applications must be either: 1) A principal executive officer of at least the level of a Vice-President or; 2) A duly authorized representative so identified in writing by a Vice-President or higher. See 40 CFR Section 144.32 (a) and (b).

- A. ATTACHMENT "A" AREA OF REVIEW METHODS: Additional information is needed. The regulations (144.31(e)(7)) require a map showing each injection well and other wells, springs, and other surface water bodies, and drinking water wells. The area depicted on the map is to extend 1 mile beyond the injection well.
- B. ATTACHMENT "E" NAME AND DEPTH OF USDW's: There is an uncertainty that all USDW's have been listed. Refer to 144.3 for the definition of a USDW. Indicate reasons for not including water producing zones encountered in drilling. See 146.24(a)(6). Murphy Oil Incorporated states that the lower most USDW is an unnamed Tertiary Sand. The Judith River Formation is also a USDW (TDS levels are less than 10,000 parts per million) and is protected under the UIC regulations. For those wells not injecting into the Judith River, what is the depth from surface to this formation?
- C. ATTACHMENT "G" GEOLOGICAL DATA ON INJECTION AND CONFINING ZONES: The values for the fracture pressure of the upper confining zone, the injection zone, and the lower confining zone need to be supplied. This information is required in 146.24(a)(5) and on Form 4. Indicate how the fracture pressure was determined.
- D. ATTACHMENT "H" OPERATING DATA: The average and maximum daily injection rate of the fluids need to be furnished (i.e. gallons/hr/day). Is there a stimulation procedure proposed (146.24(b)(2))? What are the proposed contingency plans to cope with well failures (146.24(b)(4))? Provide a map illustrating location or provide Township, Range and Section of all wells for which a water analysis is provided. Do each of the injection wells receive water from all indicated wells on the water analysis reports? Do any of the injection wells receive fluids from formations or wells other than those indicated on the water analysis reports?
- E. ATTACHMENT "M" CONSTRUCTION DETAILS: This attachment is missing. It is necessary to have all construction details of the injection well.
- F. ATTACHMENT "Q" PLUGGING AND ABANDONMENT PLAN: This attachment has not been signed or dated. "Type of Authorization" has not been indicated. "Method of Emplacement of Cement Plugs" has not been indicated. The type of cement needs to be indicated. The estimated cost to plug the wells has not been provided.



- G. ATTACHMENT "R" NECESSARY RESOURCES: A Surety Bond, Letter of Credit, or proof of a Trust Fund for the total cost of plugging the well are among the acceptable demonstrations of financial responsibility as required by 40 CFR Section 144.52(a)(7). You have the option of submitting a Financial Statement in lieu of a financial instrument. However, the use of a Financial Statement is subject to EPA approval. Does Murphy Oil have a bond with the Board of Oil and Gas Conservation of the State of Montana? If so, please submit a copy of it with your corrections to the injection well applications.
- H. ATTACHMENT "T" EXISTING EPA PERMITS: This has not been completed. Indicate whether there are existing permits under RCRA, NPDES, or Prevention of Significant Deterioration (PSD) program under the Clean Air Act for each well site or the unit.
- I. ATTACHMENT "U" DESCRIPTION OF BUSINESS: In order to satisfy 144.31(e)(1) and 144.31(e)(8) and this attachment, submit a one to two paragraph description of the activities at each injection operation. Identify the wells that produce the fluid; how the fluid arrives at the injection well; whether the produced fluids that have differing TDS values are mixed and the likely resulting final TDS value for each injection well; what the likely hours of operation are i.e. 16 hrs/day etc.

AREA OF NOTIFICATION: You are required to give separate notice of intent to apply for a permit to each owner or tenant of the land within one-half mile of the subject well. See 40 CFR Section 147.1355(b) and (c). When you have given notice, please submit a list of the names and addresses of the owners of record to whom you have sent notice and how notice was given to this office. See 40 CFR Section 144.31(e)(9).

OTHER PERMITS: No statement of permits from state or federal agencies was included, whether permits were issued or not. See 40 CFR Section 144.31(e)(6). Of particular interest would be any permits issued by BLM, BIA, or the Board of Oil and Gas Conservation of the State of Montana.

The attachments for "Completion Report for Brine Disposal, Hydrocarbon Storage, or Enhanced Recovery Well" are missing. This form was not signed or dated for each application. Please include all well logs and a Cement Bond Log for each well.

#### INDIVIDUAL WELL APPLICATION DEFICIENCIES

##### EPU 1-D (MTS 21PE-0022)

- 1) In Attachment A, provide a schematic of EPU #78, which is a plugged well. Show locations of plugs, type of cement, material used between plugs, type, depth and age of casing remaining in hole. Also, provide any forms submitted to the Montana Board of Oil and Gas Conservation and the Bureau of Land Management. Please indicate depth of formation tops in the above schematic. Was each plug tagged in EPU #78? Are there drinking water wells within 1/4 mile radius?

- 2) In Attachment G, is the Basal Colorado Silt present above the Dakota Formation?
- 3) In Attachment Q, there is an asterisked number, but there is no indication as to what the asterisk means. Explain the proposed cementing data for Plug #1 and #2. Size of hole indicated on the form does not appear to account for the annulus space between tubing and bore hole. The distance calculated to the top of plug uses the 6.366" diameter hole. What is the justification for a 9 foot plug at 3,100 feet? Where is Plug #2 located?
- 4) On the "Completion Report for Brine Disposal...", EPA Form 7520-10, explain the values given for Casing/Tubing Depth and Cement Sacks and Hole Depth.
- 5) On Form 4, Section IX has a typo in the Township description. The township is given as 29W.

EPU 5-D (MTS 21PE-0021)

- 1) In Attachment E, there is no depth to bottom provided for the unknown named Tertiary formation.
- 2) In Attachment G, is the Basal Colorado Silt present above the Dakota Formation?
- 3) In Attachment Q, "Method of Emplacement of Cement Plugs" has not been completed. There is an asterisk by a number, however there is no indication as to what the asterisk means. Explain the "Cementing To Plug and Abandon Data", contained on the form. The calculated top of Plug #1 does not calculate to the depth given for the amount of cement slurry. What is the justification for a 19 foot plug at a depth of 3150 feet? Where is Plug #2 located? Why are 6 feet of the tubing and casing being removed?

EPU 8-D (MTS 21 PE-0023)

- 1) Attachment Q, needs additional information and/or explanation. "Method of Emplacement of Cement Plugs", has not been indicated.
- 2) Explain putting 1 foot of 13 3/8" casing into the well and removing 6 feet of the 9 5/8" and 5 1/2" casings?
- 3) In "Cementing to Plug and Abandon Data", explain the single asterisk for different points of reference on the form. Also, explain the top of plug calculation. What is the depth to bottom of Plug #2 and Plug #3?

- 4) Supply the Completion Report for this injection well when it was converted to inject into the Judith River Formation. The well was recompleted 1/28/78 into the Judith River.

EPU #29-D (MTS 21PE-0024)

The injection zone for this well is the Judith River at a depth of 853 to 887 feet from ground surface. The well is 5,875 feet deep. Is the well plugged back? To what depth? How were the perforations isolated? Is there tubing and a packer, if so where are they set? If the well is not plugged back it will need to have plugs at least at the old production zone and cement up to 50 feet from the top of the Clagget Shale. A Cement Bond Log will be required as will a Mechanical Integrity Test prior to any effective permit.

EPU #80-D (MTS 21PE-0026)

- 1) The location plotted on the plat on form 7520-14 is plotted incorrectly in relation to the location given. The location given on that form is not the same as the location on the form 4, please correct. There was no location given on form 7520-10, please complete. All locations given on the forms are different, please correct.

As soon as we receive all the information listed above, we will be able to proceed with processing the permits. Please submit the required information to the Denver Regional office as soon as possible, but no later than November 26th. If you have any questions regarding this letter, or on the status of your application, please contact Angus Campbell at (303) 844-4579 or Mike Liuzzi at (303) 844-2731.

Sincerely,



Max Dodson, Director  
Water Management Division

AUG 7 1984

Campbell  
p 249 835 213

Ref: 840

Mr. Alvin W. Simpson  
Manager of Operations  
Murphy Oil USA, Inc.  
200 Peach Street  
El Dorado, Arkansas 71730

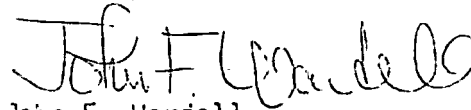
Dear Mr. Simpson:

Thank you for your letter requesting an extension of time for submittal of the applications for permits for salt water disposal wells in the East Poplar Field. As had previously been stated verbally by Mr. Sid Campbell of your office, an extension until August 31, 1984 would allow your staff to complete all applications. This revised deadline is acceptable to us.

You are advised, however, that the wells for which we requested applications will lose their authorization on August 31, 1984, if we have not received those applications by that date. You will be in violation of the Safe Drinking Water Act if the wells are operated beyond that date unless an application has been submitted. The penalty for such a violation can be as much as \$10,000 per day for each day of violation.

If your staff has any questions on the application process, please contact Bill Engle at (406) 449-5414.

Sincerely,



John F. Wardell  
Director  
Montana Office

ENGLE:fa/8/6/84/5441

## CONCURRENCES

SYMBOL							
SURNAME							
DATE							

REF: 8WM-DW

JUN 25 1984

Mr. Alvin Simpson  
 Murphy Oil Corporation  
 200 Peach Street  
 Eldorado, Arkansas 71730

Dear Mr. Simpson:

You are hereby requested to submit permit applications for the following wells by July 30, 1984:

<u>Field</u>	<u>Well Name</u>
East Poplar	59-D
	1-D
	5-D
	29-D
	8-D
	80-D

EPA is requiring permit applications for these wells for the following reasons: 1) The agency has determined that salt water disposal (SWD) wells pose a significant threat to Underground Sources of Drinking Water (USDW's) in this area and is therefore permitting them as soon as possible, and; 2) EPA has received assertions from the Bureau of Indian Affairs (BIA) of ground water contamination as a possible result of salt water disposal activities on the Fort Peck Indian Reservation. Since the East Poplar and Northwest Poplar fields are the area of greatest concern to the tribe and the BIA, we are requesting that permit applications for wells from these fields be submitted first.

Please complete one of the enclosed application forms for each well listed by July 30, 1984. Be sure that all the applications are complete and that all required attachments are included. Submit the completed applications to:

Chief, Drinking Water Branch  
 U.S. Environmental Protection Agency (8WM-DW)  
 1860 Lincoln Street  
 Denver, Colorado 80295

Within the next year, we will be requiring permit applications for your salt water disposal wells in other fields. You have the option of permitting all your SWD wells at this time. Contact Richard Long or William Engle as mentioned below for more permit application forms if you would like to do so.

SYMBOL	SURNAME	DATE	CONCURRENCES						
SMC	SMC	6-25-84							

The SWD wells listed above may continue to operate under current authorization by rule until:

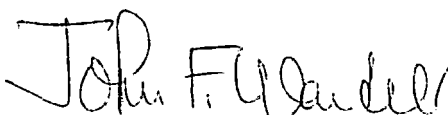
The effective date of a permit (activities will then be authorized by permit);

The denial of a permit (the well will no longer be authorized to inject); or

The owner or operator fails to submit the permit application within the time period specified in this notice (at which time the authorization to inject will be revoked).

I encourage you to contact either Richard Long in the EPA Denver Regional Office (Phone: (303) 844-3914) or William Engle in the EPA Montana Operations Office (Phone: (406) 449-5414) as soon as possible if you have any questions.

Sincerely yours,

  
John F. Wardell, Director,  
Montana Office

cc: Mr. Raymond Reede  
Murphy Oil Corporation  
P.O. Box 507  
Poplar, Montana 59255

Enclosures: Permit Application Forms



200 PEACH STREET  
EL DORADO, ARKANSAS 71730

August 27, 1984

AUG 29 1984

Chief, Drinking Water Branch  
U.S. Environmental Protection Agency (8WM-DW)  
1860 Lincoln Street  
Denver, Colorado 80295

Dear Sir:

Enclosed are the applications requested by Mr. John F. Wardell, Director, Montana Office of the EPA.

The applications enclosed are for East Poplar Field, wells 59-D, 1-D, 5-D, 29-D, 8-D, and 80-D. There is a Murphy Oil Corporation Annual Report which is the financial statement referred to in each application.

We have indicated on each application the election of an individual well permit; however, we would like to request an area or field wide permit for the Dakota (Fall River) and for Judith River zones.

We hope the applications are complete for permitting procedures; however, if you have any questions please contact Mr. Sidney W. Campbell at (501) 862-6411. Also we would like to file applications on our other fields at a later date. Please let us know when these need to be filed.

Yours very truly,

Alvin W. Simpson  
Manager of Operations

AWS/ac

cc: John F. Wardell  
Ray Reede

(SPUR)

4. SEPA										UNDERGROUND INJECTION CONTROL PERMIT APPLICATION (Collected under the authority of the Safe Drinking Water Act, Sections 1421, 1422, 40 CFR 144)										T/A C			
UIC										U 21PE-0025													
READ ATTACHED INSTRUCTIONS BEFORE STARTING FOR OFFICIAL USE ONLY																							
Application approved no day year				Date Received mo day year				Permit/Well Number						Comments									
								EPU 59-D															
I. FACILITY NAME AND ADDRESS											III. OWNER/OPERATOR AND ADDRESS												
Facility Name East Poplar Unit											Owner/Operator Name Murphy Oil USA, Inc.												
Street Address P. O. Box 547											Street Address 200 Peach Street												
City Poplar				State MT		ZIP Code 59255		City El Dorado				State AR		ZIP Code 71730									
IV. OWNERSHIP STATUS (Mark 'x')											V. SIC CODES												
<input type="checkbox"/> A. Federal <input type="checkbox"/> B. State <input checked="" type="checkbox"/> C. Private																							
<input type="checkbox"/> D. Public <input type="checkbox"/> E. Other (Explain)																							
VI. WELL STATUS (Mark 'x')																							
<input checked="" type="checkbox"/> A. Operating											<input checked="" type="checkbox"/> B. Modification/Conversion <input type="checkbox"/> C. Proposed												
Date Started mo day year 6 11 61											Permitting Existing Well Approved by Rule												
VII. TYPE OF PERMIT REQUESTED (Mark 'x' and specify if required)																							
<input checked="" type="checkbox"/> A. Individual <input type="checkbox"/> B. Area											Number of Exist- ing wells      Number of Pro- posed wells      Name(s) of field(s) or project(s) East Poplar Unit												
VIII. CLASS AND TYPE OF WELL (see reverse)																							
A. Class(es) (enter code(s))			B. Type(s) (enter code(s))			C. If class is "other" or type is code 'x,' explain						D. Number of wells per type (if area permit)											
11-D																							
IX. LOCATION OF WELL(S) OR APPROXIMATE CENTER OF FIELD OR PROJECT											X. INDIAN LANDS (Mark 'x')												
A. Latitude			B. Longitude			Township and Range																	
Deg Min Sec			Deg Min Sec			Twp		Range		Sec		1/4 Sec		Feet from		Line		Feet from		Line		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
						28N		51E		4		NW		1911		N		732'		W			
XI. ATTACHMENTS																							
(Complete the following questions on a separate sheet(s) and number accordingly; see instructions) FOR CLASSES I, II, III (and other classes) complete and submit on separate sheet(s) Attachments A — U (pp 2-6) as appropriate. Attach maps where required. List attachments by letter which are applicable and are included with your application:																							
XII. CERTIFICATION																							
I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)																							
Name and Title (Type or Print) Alvin W. Simpson Manager of Operations											B. Phone No. (Area Code and No.) 501-862-6411												
Signature Alvin W. Simpson/swc											D. Date Signed August 28, 1984												



EPU #59-D

A. Fixed Radius of 1/4 Mile  
No wells within area of review

E. Name and Depth of USDWs (Class II)

<u>Depth</u>	<u>Name</u>	<u>Local Name</u>
86'	Tertiary Sand	Unknown

G. Geological Data

<u>Zone</u>	<u>Name</u>	<u>Description</u>	<u>Depth</u>	<u>Thickness</u>	<u>Frac Pressure</u>
Upper Confining	Skull Creek	Gray Shale w/ Traces of Red Silt	2904±	170±	Unknown
Injection	Dakota	White, Fine Grain, porous Sandstone	3070±	300±	Unknown
Lower Confining	Fuson	Dark Gray Shale w/trace of sand	3570±		Unknown

H. Operating Data - Currently Not in Use

- (1) Average Injection Rate - 4500 Bbls/Day  
Maximum Injection Rate - 6500 Bbls/Day
- (2) Average Injection Pressure - 650 psi  
Maximum Injection Pressure - 800 psi
- (3) Annulus Fluid - Corrosion inhibited fluid
- (5) Source of Injection Fluid - Mississippian Formation Fluid  
produced from the East Poplar Field

Q. Plugging and Abandonment Plan  
EPA Form 7520-14 is attached

R. Necessary Resources

See attached financial statement

U. Description of Business - Murphy Oil USA, Inc. is an oil and gas Exploration and Development Company with refining and marketing assets.



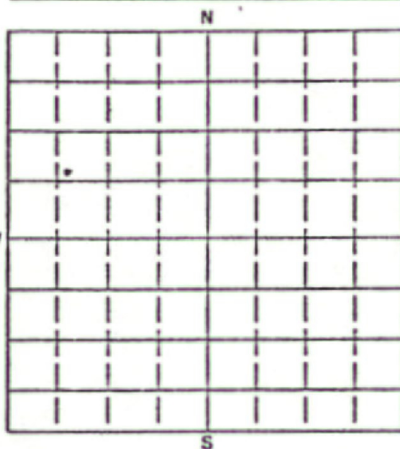
## PLUGGING AND ABANDONMENT PLAN

NAME AND ADDRESS OF FACILITY

Murphy Oil USA, Inc.  
Poplar, Montana

EPU 59-D

NAME AND ADDRESS OF OPERATOR

Murphy Oil USA, Inc.  
200 Peach St., El Dorado, AR 71730LOCATE WELL AND OUTLINE UNIT ON  
SECTION PLAT — 640 ACRES

STATE

MT

COUNTY

Roosevelt

PERMIT NUMBER

SURFACE LOCATION DESCRIPTION

NE 1/4 OF SW 1/4 OF NW 1/4 SECTION 4 TOWNSHIP 28N RANGE 58E

LOCATE WELL IN TWO DIRECTIONS FROM NEAREST LINES OF QUARTER SECTION AND DRILLING UNIT

Surface  
Location 1911 ft. from (N/S) N Line of quarter section  
and 732 ft. from (E/W) W Line of quarter section

TYPE OF AUTHORIZATION

- ☐
- Individual Permit
- 
- ☐
- Area Permit
- 
- ☐
- Rul.

Number of Wells \_\_\_\_\_

Lease Name EPU

WELL ACTIVITY

- ☐
- CLASS I
- 
- ☒
- CLASS II
- 
- ☒
- Brine Disposal
- 
- ☐
- Enhanced Recovery
- 
- ☐
- Hydrocarbon Storage
- 
- ☐
- CLASS III

Well Number 59-D

## CASING AND TUBING RECORD AFTER PLUGGING

SIZE	WT(LB/FT)	TO BE PUT IN WELL (FT)	TO BE LEFT IN WELL (FT)	HOLE SIZE
13 3/8	48#		139.85	17 1/2
9 5/8	36#		942.83	12 1/2
5 1/2	15.5		5735.36	8 3/4

## METHOD OF EMPLACEMENT OF CEMENT PLUGS

- ☒
- The Balance Method
- 
- ☒
- The Dump Bailer Method
- 
- ☐
- The Two-Plug Method
- 
- ☐
- Other

## CEMENTING TO PLUG AND ABANDON DATA:

	PLUG #1	PLUG #2	PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG #7
Size of Hole or Pipe in which Plug Will Be Placed (inches)	*5 1/2	5 1/2	9 5/8				
Depth to Bottom of Tubing or Drill Pipe (ft.)	3214						
Sacks of Cement To Be Used (each plug)	2	10	10				
Slurry Volume To Be Pumped (cu. ft.)	2	10	10				
Calculated Top of Plug (ft.)	3195	10	20				
Measured Top of Plug (if tagged ft.)							
Slurry Wt. (Lb./Gal.)							
Type Cement or Other Material (Class III)							

## LIST ALL OPEN HOLE AND/OR PERFORATED INTERVALS AND INTERVALS WHERE CASING WILL BE VARIED (If any)

From	To	From	To
3337	3365		
4390	3330		
3264	3276		

Estimated Cost to Plug Wells \*Cast iron B.P. will be set at 3214'  
10 sacks cement will be pumped down 5 1/2" csg annulus

## CERTIFICATION

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

NAME AND OFFICIAL TITLE (Please type or print)

Alvin W. Simpson  
Manager of Operations

SIGNATURE

DATE SIGNED



**COMPLETION REPORT FOR BRINE DISPOSAL  
HYDROCARBON STORAGE, OR ENHANCED RECOVERY WELL**

NAME AND ADDRESS OF EXISTING PERMITTEE

Murphy Oil USA, Inc.  
200 Peach St.  
El Dorado, AR 71730

EPU 59-D

NAME AND ADDRESS OF SURFACE OWNER

Submarginal Land  
BIA  
Poplar, MontanaLOCATE WELL AND OUTLINE UNIT ON  
SECTION PLAT — 640 ACRES

STATE

MT

COUNTY

Roosevelt

PERMIT NUMBER

SURFACE LOCATION DESCRIPTION

NE 1/4 OF SW 1/4 OF NW 1/4 SECTION 4 TOWNSHIP 20N RANGE 51E

LOCATE WELL IN TWO DIRECTIONS FROM NEAREST LINES OF QUARTER SECTION AND DRILLING UNIT

Surface 1911  
Location \_\_\_\_\_ ft. from (N/S) \_\_\_\_\_ Line of quarter section  
and 732 ft. from (E/W) \_\_\_\_\_ Line of quarter section

WELL ACTIVITY

TYPE OF PERMIT

☒ Brine Disposal☐ Individual☐ Enhanced Recovery☐ Area☐ Hydrocarbon Storage

Number of Wells \_\_\_\_\_

Estimated Fracture Pressure  
of Injection Zone Unknown

Anticipated Daily Injection Volume (Bbls)

Injection Interval

Average

Maximum

Feet

to Feet

Not In Use

3264

3342

Anticipated Daily Injection Pressure (PSI)

Depth to Bottom of Lowermost Freshwater Formation

Average

Maximum

(Feet) Bud Lien's Deepest Well  
is 86'

Type of Injection Fluid (Check the appropriate block(s))

☒ Salt Water☐ Brackish Water☐ Fresh Water☐ Liquid Hydrocarbon☐ Other

Lease Name

EPU

Well Number

59-D

Name of Injection Zone

Dakota Sand

Date Drilling Began

6-23-55

Date Well Completed

8-8-55

Permeability of Injection Zone

Data Not Available

Date Drilling Completed

7-16-55

Porosity of Injection Zone

Data Not Available

## CASING AND TUBING

## CEMENT

## HOLE

OD Size	Wt/Ft — Grade — New or Used	Depth	Sacks	Class	Depth	Bit Diameter
13 3/8	48# H-40 New	145.85	200	G?	150'	17 1/2
9 5/8	36# H-40 New	948.83	400	G?	965'	12 1/2
5 1/2	15.5 J-55 New	5741.36	300	G?	5754'	8 3/4
	Block Squeeze		450	G?	3400'	
2 7/8	6.5# J-55 New	3160'				

## INJECTION ZONE STIMULATION

## WIRE LINE LOGS, LIST EACH TYPE

Interval Treated	Materials and Amount Used	Log Types	Logged Intervals
3264-3365	1500 gals mud acid	Elect Survey 2"	962' - 5753'
		Elect Survey 5"	2000' - 5753'
		Microlog 5"	2000' - 5751'
		Microlog 25"	5000' - 5751'

Complete Attachments A — E listed on the reverse.

## CERTIFICATION

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32).

NAME AND OFFICIAL TITLE (Please type or print)

Alvin W. Simpson  
Manager of Operations

DATE SIGNED

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, DC 20460

## COMPLETION FORM FOR INJECTION WELLS

## ADMINISTRATIVE INFORMATION

## 1. Permittee

Murphy Oil USA, Inc.

Address (Permanent Mailing Address) (Street, City, State, and ZIP Code)

P. O. Box 547, Poplar, Montana 59255 (District Office)  
200 Peach Street, El Dorado, Arkansas 71730 (Home Office)

## 2. Operator

Murphy Oil USA, Inc.

Address (Street, City, State, and ZIP Code)

Same as above

## 3. Facility Name

East Poplar Unit 59-D

## Telephone Number

District Office 406-768-3611

Home Office 501-862-6411

Address (Street, City, State, and ZIP Code)

Murphy Oil USA, Inc. (District Office)  
P. O. Box 547  
Poplar, Montana 59255

## 4. Surface Location Description of Injection Well(s)

## State

Montana

## County

Roosevelt

## 1/4 of

## 1/4 of

SW

## 1/4 section

NW 4

## Township

28N

## Range

51E

## Feet from (N/S)

1911

## Line of quarter section and

N

## Feet from (E/W)

732'

## Line of quarter section

W

Submit with this Completion Form the attachments listed in *Attachments for Completion Form*.

## CERTIFICATION

*I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32).*

## NAME AND OFFICIAL TITLE (Please type or print)

Alvin W. Simpson  
Manager of Operations

## SIGNATURE

## DATE SIGNED



# YAPUNCICH, SANDERSON & BROWN

LABORATORIES

PHONE 252-6325

P. O. BOX 593

13 NO. 32nd St.

BILLINGS, MONTANA 59103

Murphy Oil Corporation

200 Jefferson Avenue

El Dorado, Arkansas 71730

DATE 3-02-76

INVOICE NO. 14121  
YOUR ORDER NO.

TERMS: NET 30 DAYS

LAB. NO.	SERVICE	AMOUNT
12700	Routine Water Analysis, 5 Samples @ \$35.00/sample	\$ 175.00
	Evaporation for Salt, 5 Samples	25.00
		<u>\$ 200.00</u>

## Madison Formation

North End of East Poplar Unit, Roosevelt County, Montana

1. EP Unit No. 48 Wellhead Temperature 130°F C Zone
2. EP Unit No. 21 Wellhead Temperature 195°F C Zone
3. EP Unit No. 84 Wellhead Temperature 155°F C Zone
4. Composite Sample Well No. 19 Wellhead Temp. 155°F A Zone  
Well No. 38 Wellhead Temp. 175°F A Zone  
Well No. 95 Wellhead Temp. 100°F A Zone
5. Composite Sample "B" Zone  
Well No. 54 Wellhead Temp. 140°F  
Well No. 56 Wellhead Temp. 135°F  
Well No. 73 Wellhead Temp. 145°F

Received 2-26-76

Ordered by O. Paul Doyle

NO FURTHER STATEMENT WILL BE RENDERED UNLESS REQUESTED  
SPECIALIZING IN CORE, WATER, GAS, CRUDE OIL, REFINED PETROLEUM PRODUCTS ANALYSES AND FIELD ENGINEERING SERVICES

# YAPUNCICH, SANDERSON & BROWN LABORATORIES

P. O. BOX 593  
59103

BILLINGS, MONTANA

13 N. 32ND ST.

## WATER ANALYSIS REPORT

Lab. No. 12700-1

Field North End of East Poplar Unit County Roosevelt State Montana  
Well No. EP Unit No. 48 Location \_\_\_\_\_  
Formation Madison "C" Zone Depths \_\_\_\_\_  
Operator Murphy Oil Corporation Date Sampled \_\_\_\_\_  
DST No. \_\_\_\_\_ Sample \_\_\_\_\_ Date Analyzed 3-01-76  
Other Data Wellhead Temperature 130°F

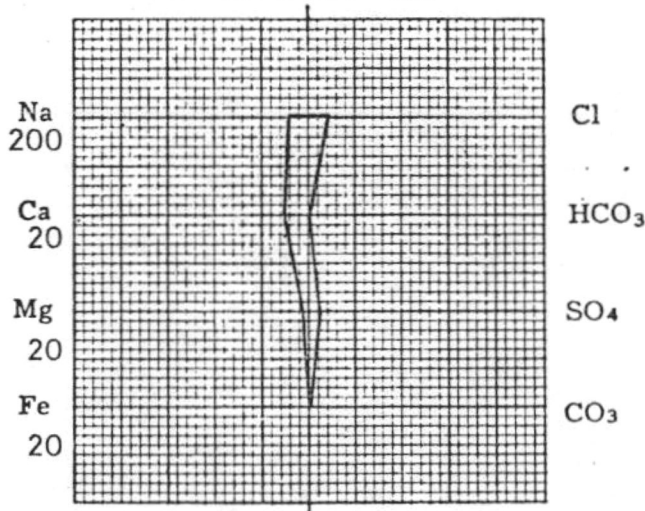
Clear, colorless water; H<sub>2</sub>S present.

Constituents	PPM	MEQ.	MEQ. %	Total Solids in Parts per Million
Sodium	9,673	420.74	43.15	By evaporation _____
Calcium	1,002	50.00	5.13	After ignition _____
Magnesium	204	16.80	1.72	Calculated <u>28,455</u>
Sulfate	1,223	25.44	2.61	pH <u>7.3</u>
Chloride	16,170	455.99	46.76	Specific Gravity @ 60°F <u>1.017</u>
Carbonate	0	0.00	0.00	Resistivity @ 68°F
Bicarbonate	372	6.10	0.63	ohms/meter <sup>3</sup> <u>0.25</u>
Chloride as NaCl	<u>25,664</u>	PPM.	Total Solids From Resistivity as NaCl	<u>27,791</u> PPM.

NOTE: Sodium and potassium reported as sodium. MEQ = milliequivalents per liter. PPM = parts per million (milligrams per liter). 1 PPM equivalent to 0.0001%

### WATER ANALYSIS PATTERN

Scale MEQ. Per Unit



# YAPUNCICH, SANDERSON & BROWN LABORATORIES

P. O. BOX 593  
59103

BILLINGS, MONTANA

13 N. 32ND ST.

## WATER ANALYSIS REPORT

Lab. No. 12700-2

Field North End of East Poplar Unit County Roosevelt State Montana  
Well No. EP Unit No. 21 Location \_\_\_\_\_  
Formation Madison "C" Zone Depths \_\_\_\_\_  
Operator Murphy Oil Corporation Date Sampled \_\_\_\_\_  
DST No. \_\_\_\_\_ Sample \_\_\_\_\_ Date Analyzed 3-01-76  
Other Data Wellhead Temperature 195°F

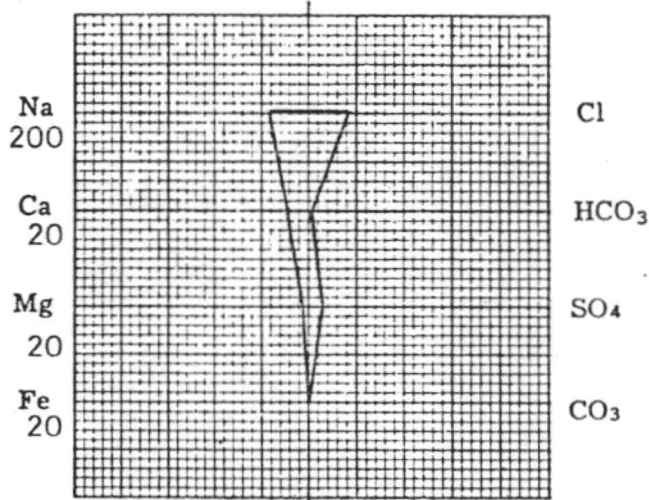
Clear, colorless water; H<sub>2</sub>S present.

Constituents	PPM	MEQ.	MEQ. %	Total Solids in Parts per Million
Sodium	19,261	837.80	46.88	By evaporation _____
Calcium	842	42.00	2.35	After ignition _____
Magnesium	168	13.83	0.77	Calculated <u>52,317</u>
Sulfate	1,486	30.92	1.73	pH <u>7.7</u>
Chloride	30,380	856.72	47.93	Specific Gravity @ 60°F <u>1.039</u>
Carbonate	0	0.00	0.00	Resistivity @ 68°F
Bicarbonate	366	6.00	0.34	ohms/meter <u>0.16</u>
Chloride as NaCl <u>50,097</u> PPM.	Total Solids From Resistivity as NaCl <u>51,522</u> PPM.			

NOTE: Sodium and potassium reported as sodium. MEQ = milliequivalents per liter PPM = parts per million (milligrams per liter). 1 PPM equivalent to 0.0001%

### WATER ANALYSIS PATTERN

Scale MEQ. Per Unit



SPECIALIZING IN CORE, WATER, GAS AND CRUDE OIL ANALYSES

# YAPUNCICH, SANDERSON & BROWN LABORATORIES

P. O. BOX 593  
59103

BILLINGS, MONTANA

13 N. 32ND ST.

## WATER ANALYSIS REPORT

Lab. No. 12700-3

Field North End of East Poplar Unit County Roosevelt State Montana  
Well No. EP Unit No. 84 Location \_\_\_\_\_  
Formation Madison "C" Zone Depths \_\_\_\_\_  
Operator Murphy Oil Corporation Date Sampled \_\_\_\_\_  
DST No. \_\_\_\_\_ Sample \_\_\_\_\_ Date Analyzed 3-01-76  
Other Data Wellhead Temperature 155°F

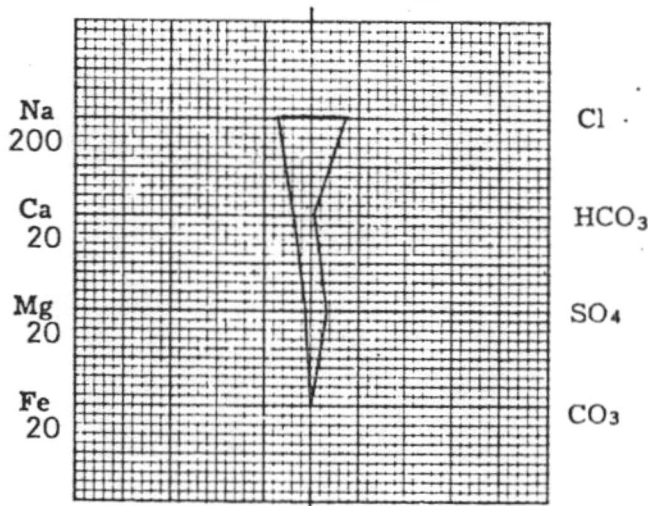
Clear, colorless water; H<sub>2</sub>S present.

Constituents	PPM	MEQ.	MEQ. %	Total Solids in Parts per Million
Sodium	17,485	760.54	46.74	By evaporation _____
Calcium	802	40.00	2.46	After ignition _____
Magnesium	156	12.85	0.79	Calculated <u>47,666</u>
Sulfate	1,585	32.97	2.03	pH <u>7.9</u>
Chloride	27,440	773.81	47.57	Specific Gravity @ 60°F <u>1.036</u>
Carbonate	0	0.00	0.00	Resistivity @ 68°F _____
Bicarbonate	403	6.60	0.41	ohms/meter <sup>3</sup> <u>0.16</u>
Chloride as NaCl	<u>45,249</u>	PPM.	Total Solids From Resistivity as NaCl	<u>46,817</u> PPM.

NOTE: Sodium and potassium reported as sodium. MEQ = milliequivalents per liter. PPM = parts per million (milligrams per liter). 1 PPM equivalent to 0.0001%

### WATER ANALYSIS PATTERN

Scale MEQ. Per Unit





# YAPUNCICH, SANDERSON & BROWN LABORATORIES

P. O. BOX 593  
59103

BILLINGS, MONTANA

13 N. 32ND ST.

## WATER ANALYSIS REPORT

Lab. No. 12700-4

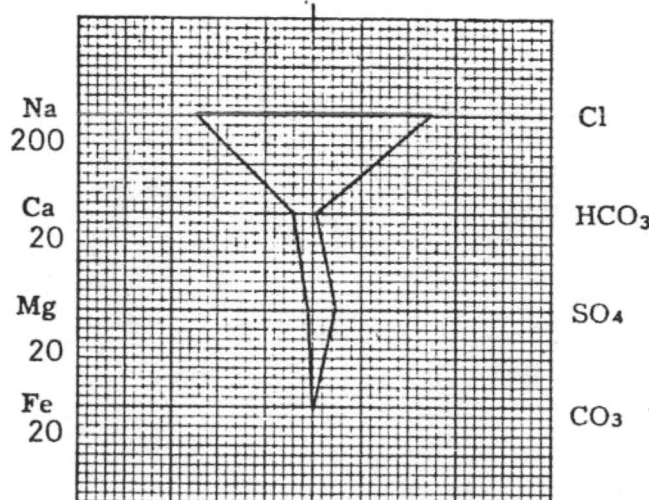
Field North End of East Poplar Unit County Roosevelt State Montana  
Well No. \* Location \_\_\_\_\_  
Formation Madison "A" Zone Depths \_\_\_\_\_  
Operator Murphy Oil Corporation Date Sampled \_\_\_\_\_  
DST No. \_\_\_\_\_ Sample \_\_\_\_\_ Date Analyzed 3-01-76  
Other Data \*Wellhead Temperature 155°F Well No. 19  
\*Wellhead Temperature 175°F Well No. 38  
\*Wellhead Temperature 100°F Well No. 95  
Clear, colorless water; H<sub>2</sub>S present

Constituents	PPM	MEQ.	MEQ. %	Total Solids in Parts per Million
Sodium	57,198	2,487.96	49.00	By evaporation _____
Calcium	802	40.00	0.79	After ignition _____
Magnesium	132	10.87	0.21	Calculated <u>148,715</u>
Sulfate	2,221	46.19	0.91	pH <u>7.4</u>
Chloride	88,200	2,487.24	48.98	Specific Gravity @ 60°F <u>1.102</u>
Carbonate	0	0.00	0.00	Resistivity @ 68°F
Bicarbonate	329	5.40	0.11	ohms/meter <sup>3</sup> <u>0.065</u>
Chloride as NaCl	<u>145,442</u>	PPM.		Total Solids From Resistivity as NaCl <u>147,557</u> PPM.

NOTE: Sodium and potassium reported as sodium. MEQ = milliequivalents per liter. PPM = parts per million (milligrams per liter). 1 PPM equivalent to 0.0001%.

### WATER ANALYSIS PATTERN

Scale MEQ. Per Unit



## YAPUNCICH, SANDERSON &amp; BROWN LABORATORIES

P. O. BOX 593  
59103

BILLINGS, MONTANA

13 N. 32ND ST.

## WATER ANALYSIS REPORT

Lab. No. 12700-5

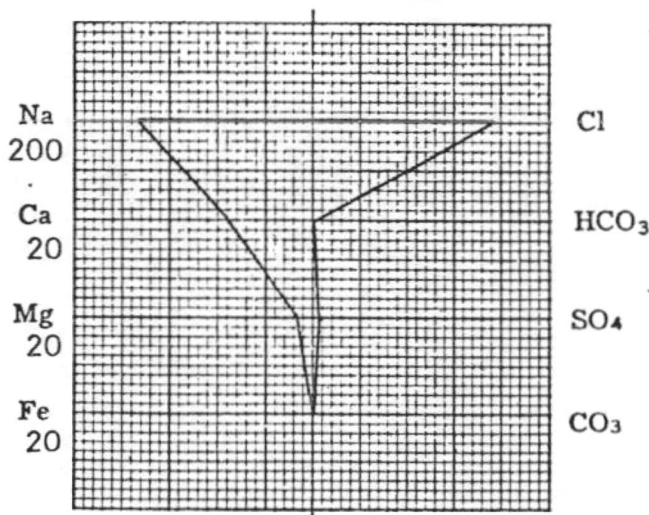
Field North End of East Poplar Unit County Roosevelt State Montana  
 Well No. \* Location \_\_\_\_\_  
 Formation Madison "B" Zone Depths \_\_\_\_\_  
 Operator Murphy Oil Corporation Date Sampled \_\_\_\_\_  
 DST No. \_\_\_\_\_ Sample \_\_\_\_\_ Date Analyzed 3-01-76  
 Other Data \*Wellhead Temperature 140°F Well No. 54  
 \*Wellhead Temperature 135°F Well No. 56  
 \*Wellhead Temperature 145°F Well No. 73  
Clear, colorless water.

Constituents	PPM	MEQ.	MEQ. %	Total Solids in Parts per Million
Sodium	83,699	3,640.67	47.17	By evaporation _____
Calcium	3,607	180.00	2.33	After ignition _____
Magnesium	469	38.53	0.50	Calculated <u>224,813</u>
Sulfate	755	15.70	0.20	pH <u>7.0</u>
Chloride	136,220	3,841.40	49.77	Specific Gravity @ 60°F <u>1.144</u>
Carbonate	0	0.00	0.00	Resistivity @ 68°F
Bicarbonate	128	2.10	0.03	ohms/meter <sup>2</sup> <u>0.050</u>
Chloride as NaCl <u>224,627</u> PPM.				Total Solids From Resistivity as NaCl <u>224,417</u> PPM.

NOTE: Sodium and potassium reported as sodium. MEQ. = milliequivalents per liter. PPM = parts per million (milligrams per liter). 1 PPM equivalent to 0.0001%

## WATER ANALYSIS PATTERN

Scale MEQ. Per Unit





200 PEACH STREET  
EL DORADO, ARKANSAS 71730

July 31, 1984

Mr. John F. Wardell, Director  
Environmental Protection Agency  
Region 8, Montana Office  
Federal Building  
301 S. Park, Drawer 10096  
Helena, Montana 59626

Dear Mr. Wardell:

We have received your request for permit applications on our East Poplar Unit salt water disposal wells. You have asked that these be filed by July 30, 1984. Based on our current schedule it appears that the applications cannot be completed by this date and it is my understanding that Mr. Bill Engle of your office has given our Mr. Sidney Campbell approval to extend the deadline for applying to August 31. We would appreciate your confirming that the filing deadline of August 31, 1984, is satisfactory.

As you have suggested, we currently plan to file permit applications for all of our salt water disposal wells by the August 31, 1984, date. Your cooperation in this matter is appreciated.

Yours very truly,

Alvin W. Simpson  
Manager of Operations

AWS/ac

cc: Mr. Ray Reede  
Murphy Oil USA, Inc.  
Poplar, Montana

AUG 06 1984

MONTANA OFFICE

